

COMPLETE SET OF PENDING CLAIMS

1. (Cancelled).

2. (Currently Amended) An identity verification apparatus based on biometrics, comprising:

a scanning means for obtaining an object image by scanning a body part of a person without physical contact;

an image display means for displaying the object image;

a guide display means for displaying a guide layered over the object image, the guide showing an outline of the body part in proper position before obtaining the object image;

a ~~judgement~~ judgment means for judging whether the object image was scanned in the proper position; and

a verification means for extracting biometric information describing a form characteristic of the body part from the object image, if in the proper position, and verifying identity by comparison with stored reference biometric information.

3. (Original) The identity verification apparatus in Claim 2, further comprising a scanning control means for controlling scanning direction and magnification of the scanning means.

4. (Currently Amended) The identity verification apparatus in Claim 2, further comprising:

a motion detection means for controlling the scanning means, in order to repeatedly scan the body part, and detecting movement of the body from a plurality of object images obtained by repeated scanning,

wherein, when the motion detection means detects movement of the body, and the ~~judgement~~ judgment means judges that the body part is scanned in the proper position, the verification means verifies identity.

5. (Currently Amended) The identity verification apparatus in Claim 4, wherein the body part is an iris of an eye, and the motion detection means illuminates the iris, controls the scanning means in order to scan the iris in phase with the illumination, and detects movement of the iris ~~body-based on the plurality of object images~~.

6. (Original) The identity verification apparatus in Claim 2, further comprising: a repetition control means for controlling the scanning means in order to repeatedly scan the body part; and a verification means for extracting biometric information from a plurality of object images obtained by repeated scanning and verifying identity.

7. (Currently Amended) The identity verification apparatus in Claim 2, further comprising: a multiple body part control means for controlling the scanning means to obtain an object image of each of a plurality of body parts, causing the image display means to display the object images, causing the guide display means to display the guide images, and causing the ~~judgement~~ judgment means to judge whether the body parts are scanned in the proper position, wherein the verification means extracts object biometric information pertaining to each body part from a plurality of object images, and verifies identity by comparing the object biometric information with corresponding reference biometric information.

8. (Original) The identity verification apparatus in Claim 7 wherein the verification means assigns a correlation value to represent a level of correlation for each comparison, calculates a total from a plurality of the correlation values, and verifies identity based on whether the total is greater than a given threshold value.

9. (Original) The identity verification apparatus in Claim 7, wherein the plurality of body parts comprises a fingerprint and an iris.

10. (Original) The identity verification apparatus in Claim 7, wherein the plurality of body parts comprises a fingerprint from each of a plurality of fingers.

11. (Original) The identity verification apparatus in Claim 7, wherein the plurality of body parts comprises two irides.

12. (Original) The identity verification apparatus in Claim 2, further comprising an ID data obtaining means for obtaining object ID data to verify a person's identity incident to scanning,

wherein the verification means verifies identity by comparing a combination of the extracted biometric information and the object ID data with a combination of the corresponding reference biometric information and reference ID data.

13. (Original) The identity verification apparatus in Claim 12 wherein the verification means

specifies one from among a plurality of combinations of reference biometric information and reference ID data, which corresponds with the object ID data, and verifies identity by comparing the specified reference biometric information with the extracted biometric information.

14. (Original) The identity verification apparatus in Claim 2, further comprising:
a storage means for storing reference biometric information; and
a reference information updating means for replacing reference biometric information stored by the storage means with biometric information extracted by the verification means.

15. (Original) The identity verification apparatus in Claim 14, wherein the reference information updating means replaces reference biometric information which has not been updated for a given period of time with biometric information extracted by the verification means.

16. (Currently Amended) An identity verification system based on biometrics, comprising a verification server and a verification terminal connected via a network, wherein

(1) the verification terminal includes:

a scanning means for obtaining an object image by scanning a body part of a person without physical contact;

an image display means for displaying the object image;

a guide display means for displaying a guide layered over the object image, the guide showing an outline of the body part in proper position before obtaining the object image;

a ~~judgement~~ judgment means for judging whether the body part is scanned in the proper position; and

a biometric information extraction means for extracting biometric information describing a form characteristic of the body part from the object image, if in the proper position, and transmitting the information to the verification server; and

(2) the verification server includes:

a biometric information storage means for storing a plurality of reference biometric information, and

a verification means for verifying identity by comparing the biometric information transmitted from the verification terminal with the reference biometric information stored in the biometric information storage means.

17. (Original) The identity verification system in Claim 16, wherein the verification terminal further comprises:

an ID data obtaining means for obtaining object ID data to verify the person's identity incident to scanning,

a downloading means for downloading from the verification server the reference biometric information which corresponds to the object ID data; and

a verification means for verifying identity by comparing the extracted biometric information with the downloaded reference biometric information; and

the verification server further comprises:

an ID data storage means for storing reference ID data corresponding to each of the plurality of sets of reference biometric information stored in the biometric information storage means;

a biometric information transmitting means for receiving object ID data from the verification terminal, referring to the ID data storage means for the corresponding reference ID data, referring to the biometric information storage means to obtain a corresponding set of reference biometric information, and transmitting the corresponding set of reference biometric information to the verification terminal.

18. (Currently Amended) A portable card used for identity verification based on biometrics, comprising:

a biometric information storage means for storing reference biometric information describing a form characteristic of a body part;

an image data obtaining means for obtaining image data from outside describing a body part wherein the image data obtaining means with guide showing an outline of the body part before obtaining the object image;

a verification means for extracting biometric information describing a form characteristic of the body part from the object image, and verifying identity by comparison with stored reference biometric information.

19. (Original) A portable telephone, comprising the identity verification apparatus in Claim 2.

20. (Original) A personal computer, comprising the identity verification apparatus in Claim 2.

21. (Original) A building management system, which controls entry and exit of persons to a building, comprising:

the identity verification apparatus in Claim 2; and

a control means for unlocking an entry and exit door to the building when identity is verified by the identity verification apparatus.

22. (Original) A motorized vehicle, comprising:
the identity verification apparatus in Claim 2; and
a control means for allowing engine starting when identity is verified by the identity verification apparatus.

23. (Original) An automatic vending machine, comprising:
the identity verification apparatus in Claim 2; and
a control means for dispensing a specified product when identity is verified by the identity verification apparatus.

24. (Original) An automated teller machine, comprising:
the identity verification apparatus in Claim 2; and
a deposit/withdrawal processing means for processing a deposit or withdrawal transaction when identity is verified by the identity verification apparatus.

25. (Original) A point-of-sale terminal apparatus, comprising:
the identity verification apparatus in Claim 2; and
a deposit/withdrawal processing means for processing a deposit or withdrawal transaction when identity is verified by the identity verification apparatus.

26. (Currently Amended) An electronic transaction system based on identity verification by biometrics, comprising a verification terminal and a verification server connected via a network, wherein

(1) the verification terminal includes:
a receiving means for receiving a request from an operator to make an electronic transaction;
a scanning means for obtaining an object image by scanning a body part of the operator without direct contact;
an image display means for displaying the object image;

a guide display means for displaying a guide image, showing an outline of the body part in proper position, layered over the object image before obtaining the object image;

a ~~judgement~~ judgment means for judging whether the body part is scanned in the proper position, based on the object image; and a biometric information extracting means for extracting biometric information describing a form characteristic of the body part from the object image, if it is in the proper position, and transmitting the biometric information, along with information describing the electronic transaction, to the verification server; and

(2) the verification server includes:

a biometric information storage means for storing a plurality of reference biometric information;

a verification means for verifying identity by comparing the transmitted biometric information with the reference biometric information; and

a transaction means for, when identity is verified, making the electronic transaction.

27. (Currently Amended) A method of identity verification based on biometrics, comprising:

a scanning step, in which an object image is obtained by a scanning means which scans a body part, without physical contact;

an image display step, in which the object image is displayed by a display means;

a guide display step, in which the display means displays a guide image showing an outline of the body part in proper position, layered over the object image before obtaining the object image;

a ~~judgement~~ judgment step, in which the position of the scanned body part is judged to be proper or not, based on the object image; and

a verification step, in which biometric information showing a form characteristic of the body part is extracted from the object image, if the position is proper, and identity is verified by comparison of the extracted biometric information with reference biometric information.

28. (Original) A computer-readable recording medium, which stores a program for verifying identity based on biometrics, the program comprising instructions for a computer to execute the identity verification method in Claim 27.